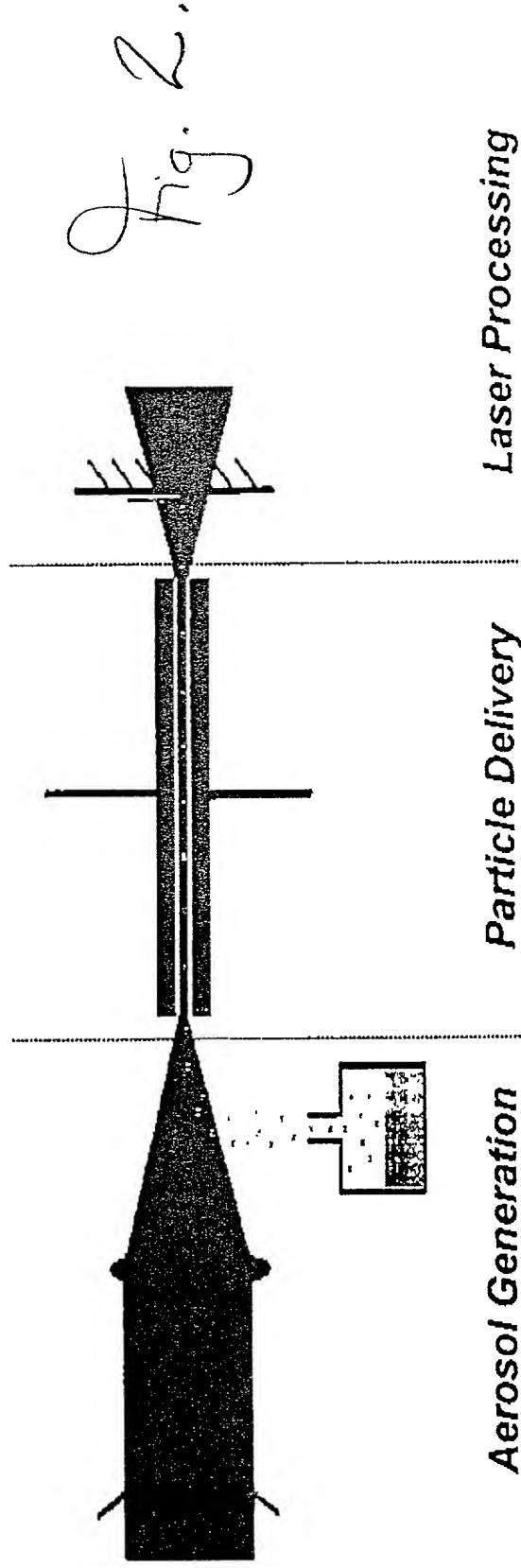


Fig. 1.

### Features

- High Velocity ( $\sim 10\text{m/s}$ )
- Variable Beam Diameter ( $10\text{ }\mu\text{m}$ )
- High Throughput ( $\sim 10^9\text{ s}^{-1}$  in  $100\text{ }\mu\text{m}$  beam)
- Reduced Clogging
- Long Working Distance ( $\sim \text{few cm}$ )
- Simultaneous Laser Treatment



### Features

- | Aerosol Generation  | Particle Delivery   | Laser Processing   |
|---|---|--|
| <ul style="list-style-type: none"> <li>• Small droplets (<math>\sim 1 \mu\text{m}</math>)</li> <li>• Dense aerosols (<math>\sim 10^{16} \text{ m}^{-3}</math>)</li> </ul> | <ul style="list-style-type: none"> <li>• Accuracy to <math>3 \mu\text{m}</math></li> <li>• Single particle to <math>10^9</math> particles/s</li> <li>• Throughput to <math>0.25 \text{ mm}^3/\text{s}</math></li> </ul> | <ul style="list-style-type: none"> <li>• Low power (<math>\sim 50 \text{ mW}</math>)</li> <li>• High scan rate (<math>\sim 1 \text{ m/s}</math>)</li> <li>• Dense, conductive materials (<math>\rho \sim 2 \times \text{bulk}</math>)</li> </ul> |

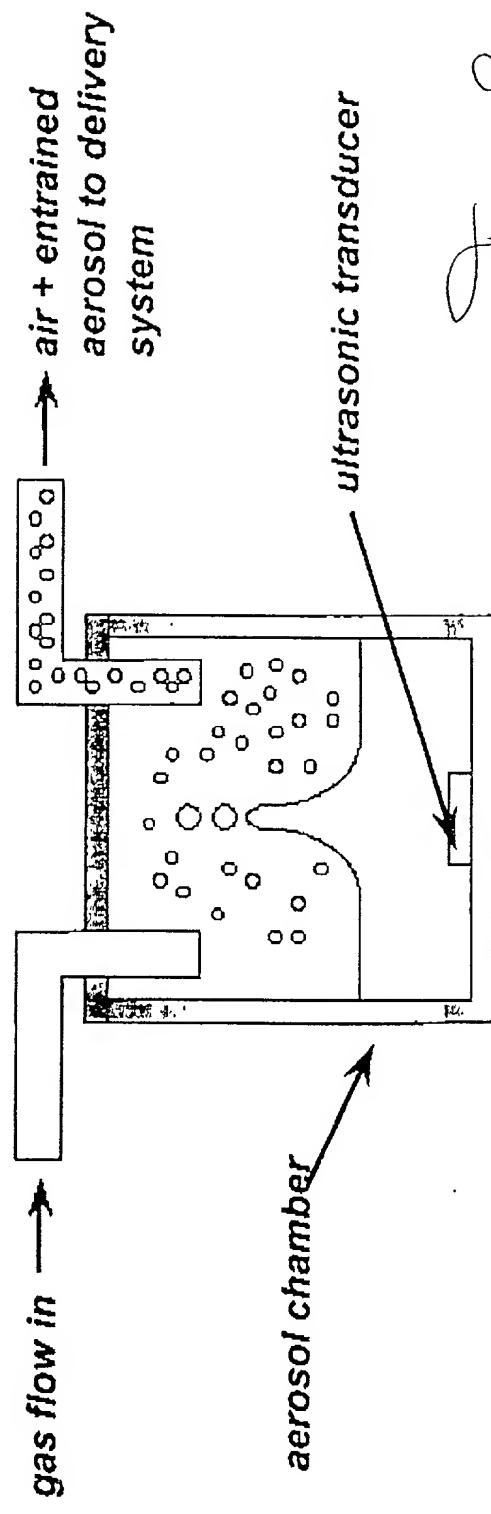


Fig. 3.

- Small droplets ( $\sim 1 \mu\text{m}$ , 1 fL)
- Dense aerosols ( $\sim 10^{16} \text{ m}^{-3}$ )
- 100  $\mu\text{L}$  minimum sample
- All solids, all precursors, or solid/precursor mixtures
- Precursor based alloys with atomic scale mixing
- Organic and biological entities in droplets (enzymes, proteins, virus, etc.)

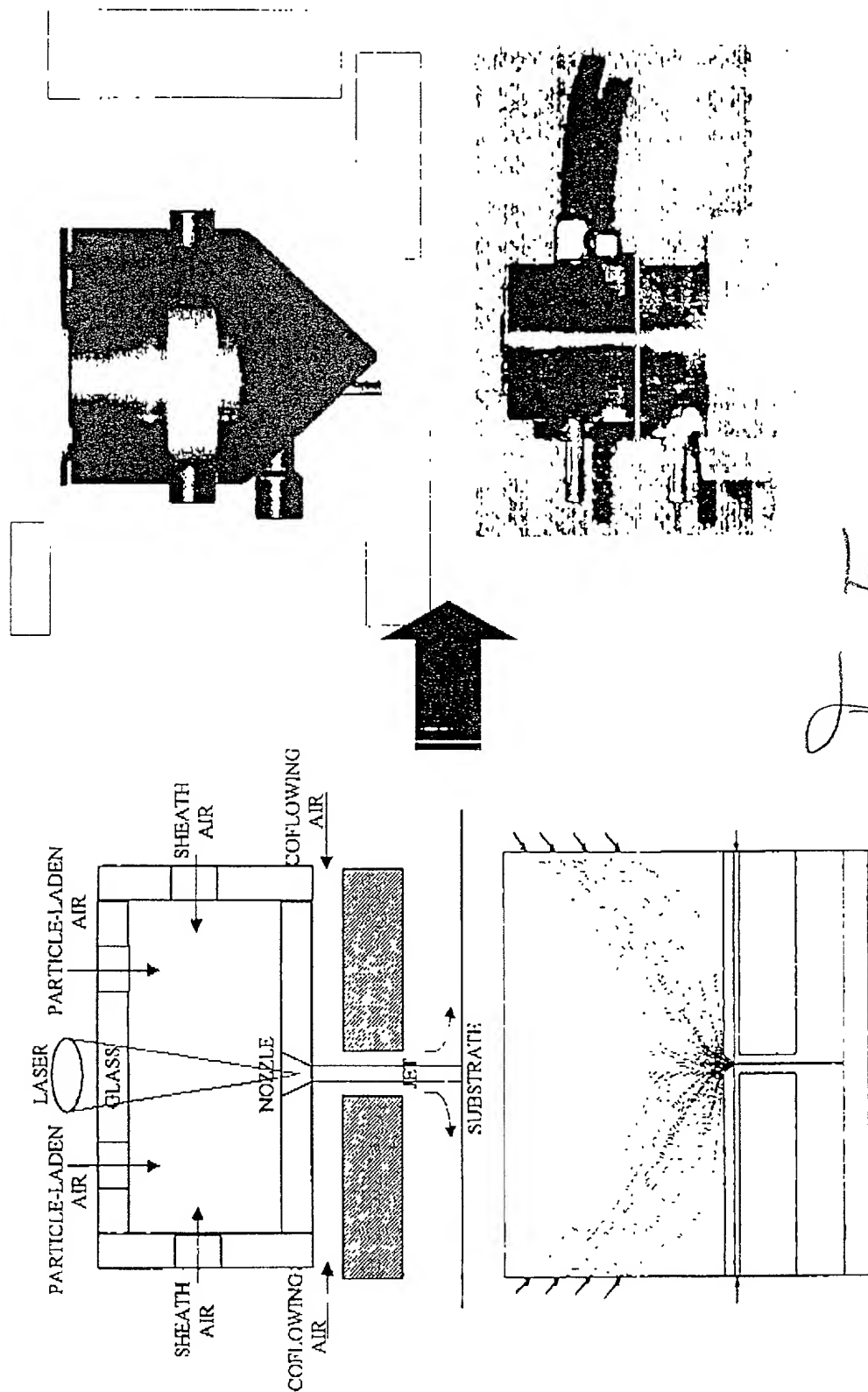
Fig. A.

Air Jet

• Large Particles (1-30  $\mu\text{m}$ )  
• High Viscosity Fluids  
• Particles + Precursor binder  
• Animal Cells + Media  
• Bacteria  
• Virus

Compressed AirJet

Particulate in Suspension



# Cascade Impaction

Gas stream carrying  
various size particles

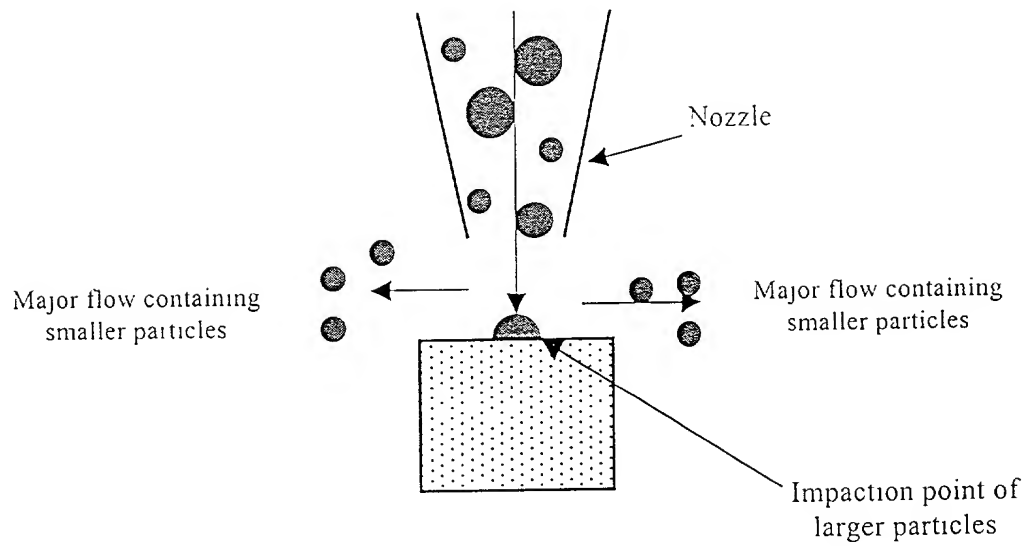


Fig. 6.

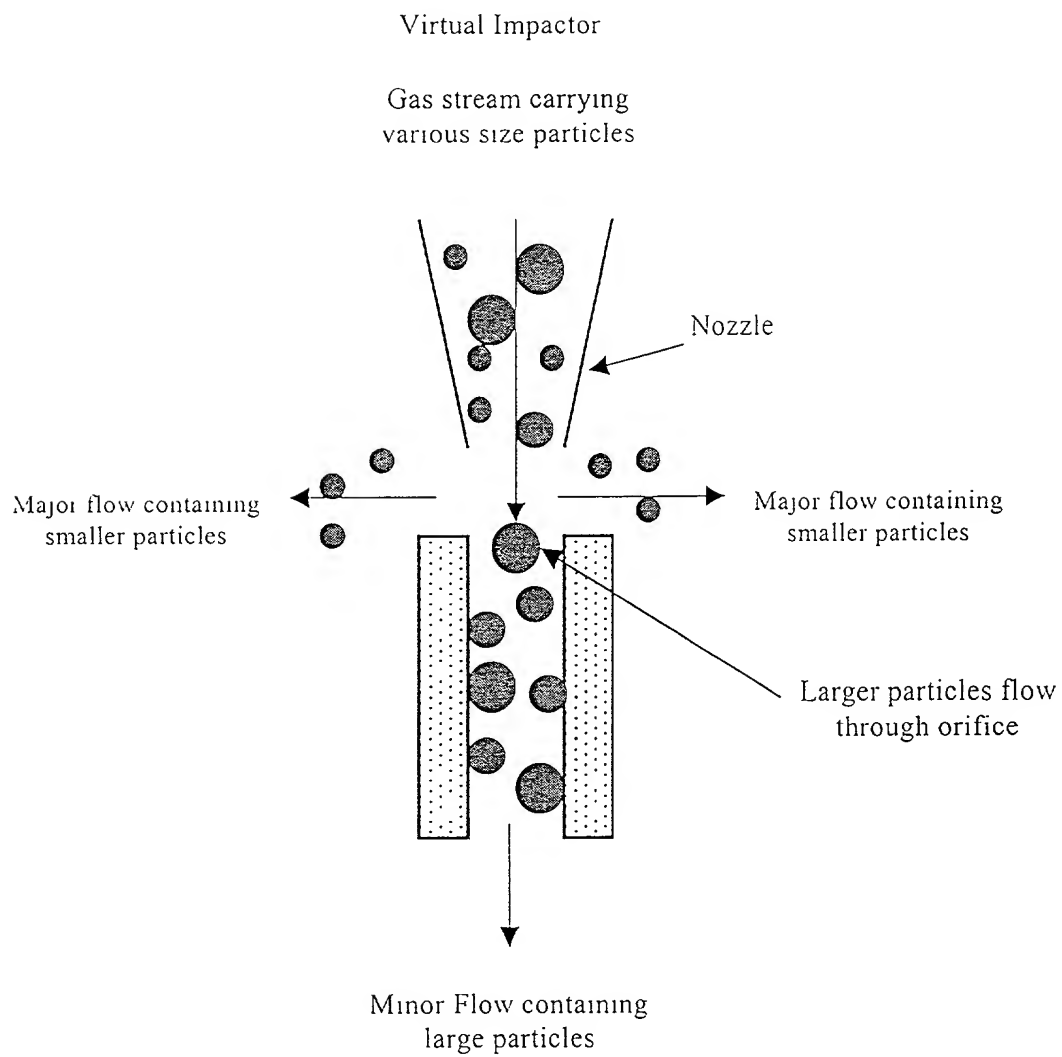
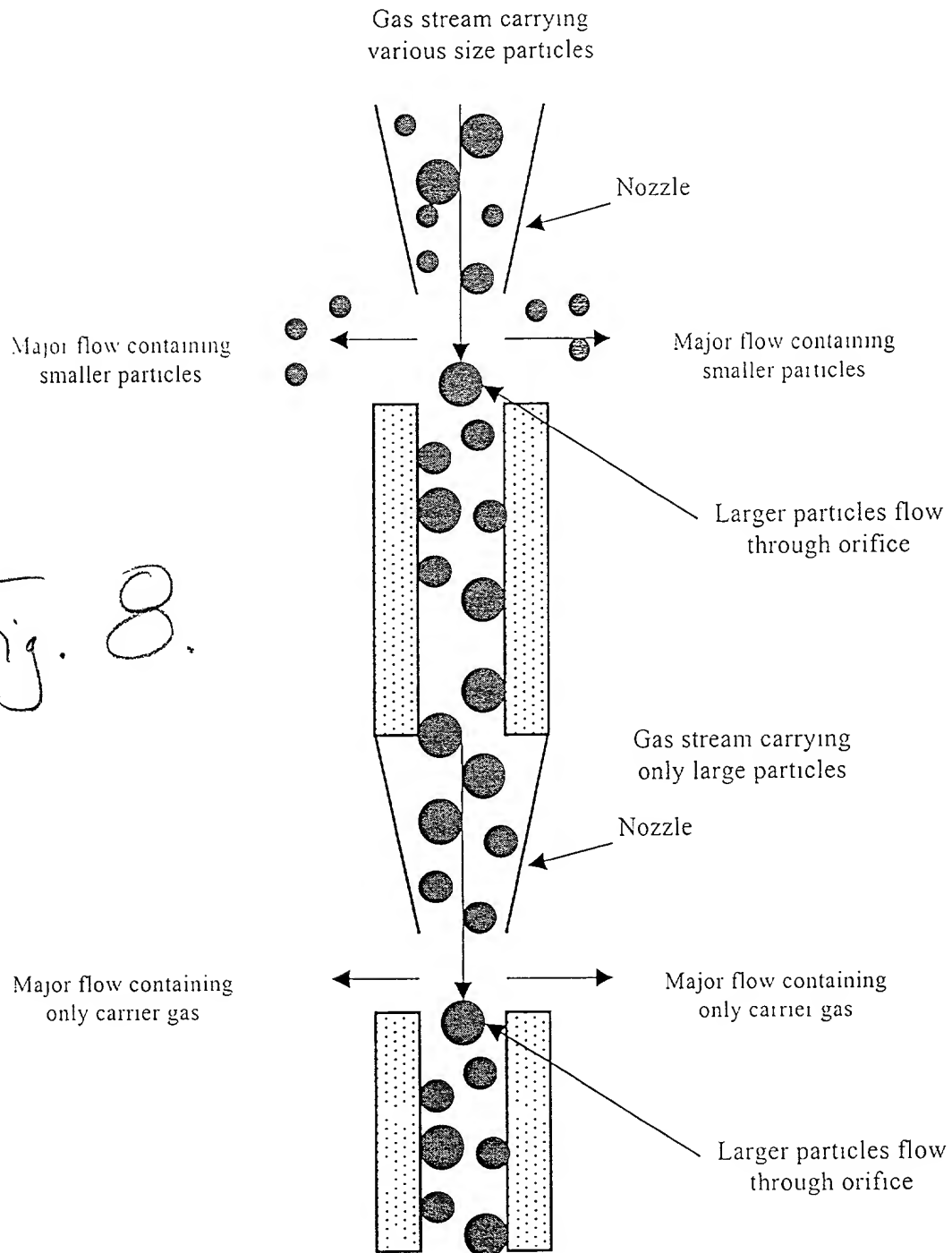


Fig. 7.

# Virtual Impactors in Series



2006-10-09 09:50:00

Fig. 8.



Variable	Mean	SD	Min	Max
Age	30.5	4.2	22	45
Gender	1.2	0.4	1	2
Education	12.5	1.5	10	16
Income	1500	500	500	3000
Marital Status	1.5	0.5	1	2
Occupation	1.8	0.8	1	3
Health Status	1.2	0.4	1	2
Stress Level	2.5	1.0	1	4
Life Satisfaction	3.5	1.5	1	5
Work-Life Balance	2.8	1.2	1	4
Family Support	3.2	1.0	1	4
Community Involvement	2.0	0.8	1	3
Personal Growth	3.0	1.2	1	4
Financial Stability	2.5	1.0	1	4
Relationship Quality	3.8	1.0	1	5
Overall Well-being	3.0	1.2	1	4

Fig. 9.

